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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,694	03/22/2004	Lester F. Ludwig	2152-3036	2364

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EXAMINER	
XIAO, KE	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/806,694	LUDWIG, LESTER F.	
	Examiner	Art Unit	
	Ke Xiao	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-25 and 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Armstrong (US 5,565,891) in view of Meriaz (US 2002/0113776).

Regarding **Claim 1**, Armstrong teaches a user interface device comprising:

a hand-held housing (Armstrong, Figs. 2, 3 and 8):

a first user interface element (Armstrong, Fig. 8 entire device);

a second user interface element configured with the hand-held housing comprising a freely rotating trackball configured to be displaceable in two independent directions relative to the hand-held housing responsive to pressure applied to the trackball (Armstrong, Figs. 2 and 3 elements 102, 106, 118 and 122);

a displacement sensor generating sensor signals independently responsive to each of the two independent directions of displacement of the trackball relative to the hand-held housing (Armstrong, Figs. 2 and 3 elements 102, 106, 118 and 122) and

signal circuitry producing an outgoing displacement signal responsive to the sensor signals (Armstrong, Figs. 2 and 3 element 130).

Armstrong fails to teach a first user interface configured as claimed or a second outgoing signal. Meriaz teaches a trackball and mouse combination where the mouse device (first user interface element) is configured with the hand-held housing and generates a first plurality of signals responsive to movement of the hand-held housing relative to two orthogonal axes and circuitry for producing a second outgoing displacement signal responsive to the first plurality of signals (Meriaz, Figs. 1-2 elements 16 and 22).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the mouse functionality as taught by Meriaz to the trackball device of Armstrong in order to provide an additional level of control for the user.

Armstrong in view of Meriaz further teaches wherein the signal circuitry being configured to permit the production of the outgoing displacement signal and the second outgoing signal simultaneously (Meriaz, paragraph [0007] the central processor takes inputs from both the mouse and the trackball and either the trackball or the mouse section can manipulate the cursor, and they can be operated independently, which means they can be produced simultaneously as well).

Regarding **Claim 3**, Armstrong further teaches that the trackball is displaceable in three independent directions (Armstrong, Figs. 2 and 3 xyz), wherein

the displacement sensor generates the sensor signals responsive to the three independent directions of the displacement of the trackball (Armstrong, Fig. 2 and 3 elements 102, 106, 118, 122 and 110).

Regarding **Claims 4-6**, Armstrong further teaches a rotation sensor generating a rotation sensor signal responsive to three independent components of rotation applied to the trackball (Armstrong, Fig. 7), wherein

the signal circuitry further produces an outgoing rotational signal responsive to the rotational sensor signal (Armstrong, Fig. 2 element 130).

Regarding **Claims 7-10**, Armstrong in view Meriaz of fails to teach that the displacement sensor is a variable resistive, variable capacitive, electro magnetic, or optical element. The examiner takes official notice that all of these elements are well known in the art to be used as displacement sensors in trackball devices for sensing depression of the trackball. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any of the above elements as the displacement sensor because each of them would perform the task of detecting the depression just as well and all of said elements are easily obtained and integrated into a trackball device.

Regarding **Claims 11 and 12**, Armstrong further teaches that the displacement sensor comprises a pressure sensor made of a switch (Armstrong, Fig. 2 and 3 elements 102, 106, 118, 122 and 110).

Regarding **Claim 13**, Armstrong further teaches that the outgoing displacement signal defines a click event (Armstrong, Fig. 2 elements 108 and 110).

Regarding **Claim 14**, Armstrong further teaches that the outgoing displacement signal is one parameter of a widely varying adjustable parameter (Armstrong, Figs. 1-3 X and Y displacement are widely varying parameters).

Regarding **Claim 15**, Armstrong teaches a user interface device comprising:

a hand-held housing (Armstrong, Fig. 8);

a first user interface element (Armstrong, Fig. 8);

a second user interface element configured with the hand-held housing comprising a freely rotating trackball configured to rotate relative to the hand-held housing (Armstrong, Fig. 2 and 3 elements 102, 106, 118, 122 and 110);

a rotation sensor generating a sensor signal responsive to one or more of three independent directions of rotation of the trackball (Armstrong, Fig. 7); and

signal circuitry producing an outgoing rotational signal responsive to the sensor signal, the outgoing rotational signal comprising three rotational component signals, each uniquely associated with one of the three independent directions of rotation of the trackball (Armstrong, Figs. 2, 7 and 8 element 130).

Armstrong fails to teach a first user interface configured as claimed or a second outgoing signal. Meriaz teaches a trackball and mouse combination where the mouse device (first user interface element) is configured with the hand-held housing and generates a first plurality of signals responsive to movement of the hand-held housing relative to two orthogonal axes and circuitry for producing a second outgoing displacement signal responsive to the first plurality of signals (Meriaz, Figs. 1-2 elements 16 and 22).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the mouse functionality as taught by Meriaz to the trackball device of Armstrong in order to provide an additional level of control for the user.

Armstrong in view of Meriaz further teaches wherein the signal circuitry being configured to permit the production of the outgoing displacement signal and the second outgoing signal simultaneously (Meriaz, paragraph [0007]).

Regarding **Claim 16**, Armstrong further teaches that the three independent directions of rotation of the trackball respectively comprise roll, pitch and yaw of the trackball (Armstrong, Fig. 7).

Regarding **Claim 17**, Armstrong further teaches that the signal circuitry comprises a signal processor (Armstrong, Fig. 2 element 130).

Regarding **Claim 18**, Armstrong further teaches a first of the three rotation component signals is generating in response to rotational roll of the trackball, a second of the three rotation component signals is generating in response to rotational pitch of the trackball, a third of the three rotation component signals is generating in response to rotational yaw of the trackball (Armstrong, Fig. 1 elements 124, 126 and 128).

Regarding **Claims 19-25** Armstrong in view of Meriaz fails to teach that the rotation sensor is a capacitive, optical, magnetic, electro magnetic, or acoustic sensor. The examiner takes official notice that all of these sensors are well known in the art to be used as rotation sensors in trackball devices for sensing rotation of the trackball. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any of the above sensors as the rotation sensors because each of them would perform the task of detecting the rotation just as well, and all of said sensors are easily obtained and integrated into a trackball device. Additionally acoustic sensors detect resonance and magnetic sensors detect polarization component.

Regarding **Claim 27**, Armstrong further teaches that the hand-held housing has a saddle assembly configured to be displaceable within the housing responsive to pressure applied to the trackball (Armstrong, Fig. 2 element 16 and 20);

a displacement sensor generating a displacement sensor signal responsive to the displacement of the saddle assembly relative to the housing (Armstrong, Fig. 2 elements 16, 20, 108 and 110); and

the sensor signal circuitry further producing an outgoing displacement signal responsive to the displacement sensor signal (Armstrong, Fig. 2 element 130).

Regarding **Claims 28 and 29**, Armstrong further teaches that the displacement sensor comprises a pressure sensor that is a switch configured to generate a displacement sensor signal as a non-binary signal (Armstrong, Fig. 2 elements 108 and 110, Col. 3 lines 25-31 the sensor can be a number of different types of switches such as resistive, capacitive, piezoelectric all of which generate analog signals which are considered non-binary).

Regarding **Claim 30**, Armstrong further teaches that the outgoing displacement signal defines a click event (Armstrong, Fig. 2 elements 108 and 110).

Regarding **Claim 31**, Armstrong further teaches that the outgoing displacement signal is one parameter of a widely varying adjustable parameter (Armstrong, Fig. 1 X and Y displacement are widely varying parameters).

Regarding **Claims 32 and 33**, Armstrong further teaches that the saddle assembly is displaceable in three independent directions (Armstrong, Figs. 2 and 4 X, Y and Z directions), wherein

the displacement sensor generates the sensor signal responsive to the three independent directions of the displacement of the saddle assembly (Figs. 2, 5 and 6 elements 108 and 110).

Regarding **Claim 34**, Armstrong in view of Meriaz further teaches a multiplexer configured to multiplex the outgoing displacement signal and the second outgoing signal to form an outgoing multiplex signal (Meriaz, paragraph [0007]).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Armstrong (5,565,891) in view of Meriaz (US 2002/0113776) as applied to claims 1-25 and 27-33 in further view of Yokoji (US 6,909,422).

Regarding **Claim 26**, Armstrong in view of Meriaz fails to teach that one direction of the three independent directions of rotation defines a click event. Yokoji teaches that a click event can be associated with any direction of rotation of a trackball (Yokoji, Figs. 2 and 7, Col. 2 lines 1-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the click event as taught by Yokoji to the rotational directions of Armstrong in order to provide a rotational haptic feedback to the user.

Response to Arguments

Applicant's arguments filed October 20th, 2008 have been fully considered but they are not persuasive.

Regarding **Claim 1**, the applicant argues that the prior art fails to teach wherein the signal circuitry being configured to permit the production of the outgoing

displacement signal and the second outgoing signal simultaneously; the examiner respectfully disagrees. In light of the newly added claim 34, which includes a multiplexer for *choosing* the outgoing signal from the two outgoing signals, it seems like the simultaneously production, as claimed does not limit the signals to be the *current* outgoing signal. Specifically the *production* of the signals can be simultaneous but only *one* of them is being output by the device at any given moment which is exactly what Meriaz is teaching, taking in both inputs and allow *either* one of the inputs to be output at any given time.

The applicant further argues that electromagnetic and magnetic sensors do *not* inherently detect at least one polarization component. The examiner respectfully disagrees. Magnets are inherently polarized or else it wouldn't be a magnet, therefore magnetic sensors must detect some form of a polarization component.

The applicant further argues that Armstrong teaches away from the conventional mouse. The examiner does not contend this argument, However Meriaz hardly teaches the conventional mouse. Instead, Meriaz teaches a modified mouse that is used in *conjunction* with a trackball which provides a distinct advantage when combined with the system of Armstrong by merely adding the features of the mouse *to* the trackball device *not* replacing it.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ke Xiao whose telephone number is (571)272-7776. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

/Ke Xiao/
Examiner, Art Unit 2629